MEMOIR 1: MIAMI GEOLOGICAL SOCIETY

A SYMPOSIUM OF RECENT SOUTH FLORIDA FORAMINIFERA

by

W. D. Bock
W. W. Hay
J. I. Jones
G. W. Lynts
S. L. Smith
R. C. Wright

Edited by James I. Jones and Wayne D. Bock

Additional copies of this memoir are available from the Miami Geological Society, 10 Rickenbacker Causeway, Miami, Florida 33149, at $7.00 each.

TABLE 1

LOCATION AND DISTRIBUTION OF STATIONS

Station	Position	Depth	Distance from Reef (Miles)	Vegetation	M_z (Ø)	σ_g (Ø)	Foraminiferal Number
1	25° 3.2' N 80° 26.7' W	2	4.8	Thalassia	1.39 1.11 1.25	2.28 2.01 2.00	2394 2092 1921
2	25° 2.5' N 80° 25.8' W	11	3.7	Thalassia	1.80 1.90 1.49	2.08 1.88 2.31	---- 1630 2408
3	25° 2.3' N 80° 25.2' W	16	3.0	Thalassia	1.24 .98 1.02	1.70 1.95 1.90	768 611 1035
4	25° 1.8' N 80° 24.6' W	20	2.2	Thalassia	2.33 2.25 2.21	1.66 1.66 1.76	2605 3704 3300
5	25° 1.6' N 80° 24.1' W	14	1.6	Thalassia	2.25 2.29 2.34	1.16 1.27 1.15	3437 2686 3514
6	25° 1.5' N 80° 23.8' W	10	1.4	Thalassia	1.26 1.03 .86	1.13 1.06 1.26	522 282 342
8	25° 1.4' N 80° 23.6' W	15	1.1	Thalassia	2.07 1.51 1.85	1.52 1.93 1.46	1905 3618 2818
9	25° 1.3' N 80° 23.5' W	30	1.0	None	.98 .69 1.03	1.08 1.29 1.07	156 228 241
9a	25° 1.3' N 80° 23.5' W	30	1.0	Thalassia	1.29 1.06 1.18	1.36 1.90 1.36	962 722 759
10	25° 0.9' N 80° 23.2' W	14	0.5	None	.64 .45 .71	1.11 1.13 1.10	95 56 59
10a	25° 0.9' N 80° 23.2' W	14	0.5	Thalassia	1.21 .76 1.54	1.40 1.84 1.02	1126 870 2016
11	25° 0.8' N 80° 23.0' W	18	0.2	Sargassum	.27 .16 .50	1.00 1.16 1.02	31 102 42
12	25° 0.7' N 80° 22.9' W	14	0.0	Sargassum	.19 -.03 .07	.69 .87 .85	25 44 60

TABLE 2 SUMMARY OF FORAMINIFERAL POPULATION DATA FOR EACH STATION

Stat.	Total Population		Bottom Samples					Vegetation Samples			
	Number of Specimens	Number of Species	Number of Specimens	Number of Living Specimens	Percent Living	Number of Species	Foraminiferal Number	Number of Specimens	Number of Living Specimens	Percent Living	Number of Species
1	11096	86	9736	133	1.4	85	2136	1360	73	5.4	70
2	5169	81	4814	92	1.9	81	2019	355	77	21.7	50
3	2625	89	2219	10	.5	88	805	406	140	34.5	33
4	2663	91	2528	57	2.3	91	3203	135	3	2.2	27
5	2844	98	2487	26	1.0	97	3212	357	48	13.5	56
6	1426	86	1213	59	4.9	84	382	213	17	8.0	46
8	3091	90	2037	28	1.4	89	2780	1054	576	54.6	61
9	1917	88	1614	105	6.5	87	208	304	150	49.4	44
9a	1474	79	1474	21	1.4	79	814	——— No Sample ———			
10	1176	86	986	53	5.4	75	70	190	66	34.7	53
10a	2063	96	2063	80	3.9	96	1337	——— No Sample ———			
11	1075	80	938	55	5.9	77	58	137	59	43.1	34
12	737	79	655	39	6.0	78	43	82	9	11.0	34

TABLE 3 PERCENTAGE DISTRIBUTION OF FORAMINIFERS

Station	1		2		3		4		5		6		8		9		9a	10		10a		11		12	
Species																									
Reophax atlantica							.1				.1		.1					.1		*				.3	
Miliammina fusca	1.9		.5		.1		.3		.2		1.0		.3	#	.3		.2	.2		.7		.4		.6	
Haplophragmoides sp.							*		.1		.1		.1		.1		.1	.2		.6				.6	
Ammobaculites exilis	*				.1												No Sample			No Sample				.2	
Bigenerina irregularis							*																		
Textularia agglutinans	*		.1		1.3	1	.9		.6		.9		1.1		2.7		2.8	.7		3.0		1.8		2.1	
Trochammina advena									*		.1									.2					
Eggerella bradyi									*																
Clavulina nodosaria	.3		.3																						
Clavulina pacifica	1.1	4	.3		.5																				
Clavulina tricarinata	1.4	1	.9		.7		*		.1				*		.1			.1		.1		.2		.2	
Valvulina oviedoiana	1.9		.9		.4				*		.1	6			.1		.1	1.0		.2		.3		.9	
Wiesnerella auriculata									.5		.2		.6		.2		.3	.7		1.6		.7		.3	
Spiroloculina antillarum	1.1		.1		.4		.1		.2		.1		.1		.1		.2			.4					
Spiroloculina caduca	*		*		*		.4																		
Spiroloculina communis	.1		.1		.1		.1		.1						.1					.1					
Miliolinella circularis	2.7	1	1.6	4	.8	2	2.2	33	3.2		2.2	6	3.0	#	1.1		2.2	.6	2	1.5		.7		1.1	
Miliolinella fichtelliana	*		*		*				.1						.5		.3	.1		.5		.3		.3	
Miliolinella labiosa	1.5	3	1.4		.2		.4		.4		.4		.3		.4	1	.5	.1		.9				.3	
Scutuloris bocki	3.2	8	7.3	1	1.9	1	3.2		3.6		4.2		2.4		1.9	1	1.6	1.1		4.3		1.9	8	1.8	11
Articulina mucronata	.2		.3	4	.4		.6		.4		.1		.2		.7		.4	.2		.5		.7		1.4	11
Articulina pacifica	.3		1.7	1	1.6		2.5		2.2		.8		2.4	#	1.9	1	2.2	1.1		2.5		1.3	22	1.2	
Articulina sagra	.4		.6		.3		.5		.8		.2		.4		.3		.5	.2		.7		.2			
Pyrgo denticulata	.2				*		*		.2		.2		*		.6		.3	.1		.4		.7	2	.5	
Pyrgo subsphaerica	.4		.2		*		.1		.1				.3		.4		1.0	.1		.6		.5		.3	
Quinqueloculina agglutinans	4.1		1.8	1	2.3		1.4		.8		.8		.5		1.4		1.0	1.9		.6		2.1		2.6	
Quinqueloculina akneriana	1.6	1	1.3		1.0		.3		.3		.2	6	.1		4.0		2.0	1.3		.3		.4		.5	
Quinqueloculina antillarum					.1		.1		.2		.2		.3		.3		.2	.1		.3		.1		.2	
Quinqueloculina bicostata					.3		*		*		.1		*				.1	.1		.1		.1			
Quinqueloculina bidentata	1.0		2.4		3.2		.8		.6		.2		.2		1.4		.6	.9	1	.1		1.6		1.1	
Quinqueloculina bosciana	8.0	18	4.3		3.6		5.4		5.0	2	6.9	24	4.6		1.9		2.3	2.0	2	5.1		3.2		2.6	11
Quinqueloculina bradyana	6.4	10	4.2		6.5		4.7		4.7		3.1		4.2		1.6		2.0	.3		3.2		.6		2.4	
Quinqueloculina collumnosa																		.1		*				.2	
Quinqueloculina crassa															.1			.1							
Quinqueloculina funafutiensis	1.4		1.7		3.3		2.4		.9		.7		1.5	#	1.1		1.2	.5		.3		.5		.3	
Quinqueloculina horrida	.4		.8		.5		.2		.2		.7		.5		.3		.1			1.0		.1			
Quinqueloculina laevigata	1.3	1	1.2		1.1		.7		.4				*		.1					.3		1.0			
Quinqueloculina lamarckiana	2.6	1	2.6		3.9	1	1.0		.6	4	.7		.4		.8	1	.9	.1		.6		.3	2	.6	
Quinqueloculina lata	.4	1	.6	3	.9		.6		.2		.1		.5		.2		.2	.3		.5		.6		1.4	
Quinqueloculina poeyana	3.6	7	3.5		2.3		5.0		6.0	2	5.0		5.9		1.2		2.2	.2		1.0		.4		.4	
Quinqueloculina polygona	1.0		.6		.9		1.2		.7		.5		.8		.6		.3	.1		1.4		.4	2	1.1	
Quinqueloculina sclerotica																				*					
Quinqueloculina tenagos	1.5	4	1.3		1.4		1.7		2.5	2	.8		.4		.1	1	.5	.1		.1					
Quinqueloculina tricarinata																		.4		*		.1		.7	
Sigmoilina arenata	.5		.9		1.0		.2		.1		.2		.1				.1			.1				.5	
Triloculina bassensis	1.7		2.8	3	.9		.7		.8		.3		.8		1.4		1.8	.5		.8		.7		.5	
Triloculina bermudezi	5.3	4	1.3	4	.9	1	3.0		2.5	6	2.0		2.0		.6		.3	.5		2.0		.7	2	1.1	
Triloculina carinata	.7		.8		.5		.2		.1		.1		*		.6		.3	.2		.1		.5		1.1	
Triloculina fiterrei meringoi									.4		1.2		1.4	#			.5			1.6		.7		.8	
Triloculina linneiana	1.4		.8		1.1		.5		1.4		1.3		.5		1.7		1.4	.6	2	.9		1.4		1.2	
Triloculina oblonga	2.9	1	1.0		.4		.2		.8		.6		.2		.5		.8			.2		.3		.5	
Triloculina rotunda	.2	1	.5	12	.5		.3		.9	4	.6		.3	#	1.2		1.4	.2		1.2		.6		.5	
Triloculina sidebottomi																		*					2		
Triloculina terquemiana	.4		.3		*		.2		.2		.1		.2		.1					*					
Triloculina transversestriata	*		*						*				*												
Triloculina trigonula	1.4	3	3.4	8	3.0	4	3.9		4.2	6	4.0	6	3.0	#	.7		.7	.2		.9		1.0		.9	
Hauerina bradyi	.2		*				.4		.4	2	.1		.3	#	.2		.8	.1		.7		.4		.5	
Hauerina ornatissima							*		.3		.2		.4	2	.1	1	.3	.1		.1		.1			
Schlumbergerina alveoliniformis	.6	3	1.3	6	2.6	2	3.0	33	4.9	10	4.6	6	5.5	2	1.5	3	2.8	.7		4.2		1.1	3	1.2	
Cruysicium poltum	.1		*		.2		.2		.2											*					
Peneroplis bradyi	.1		.9		1.4		1.1		1.2		.8		.9		1.4		2.2	.1	1	1.1		.4		1.5	
Peneroplis carinatus	9.4		7.9		8.3	1	9.5		9.7	2	6.1		10.7	1	9.2	2	8.7	1.5		6.0		2.7	2	1.5	
Peneroplis pertusus	.8		.5		.1		.5		.8		1.0		.9		.4		.7		1	1.3		.3	3	.6	
Peneroplis proteus	1.5		.3	1	.4		.2		.2		.2		.1		1.1		1.0	1.3		.3		1.0		.9	
Spirolina arietina	*		.1				.1						*		.1					*				.2	
Broeckina orbitolitoides	*		.1						.2						.7		.6	.8		.2		.3		.2	
Archaias angulatus	5.2		7.2	1	4.2		8.1		4.6		4.2		2.0		25.5		16.6	57.7	5	8.1		4.6	3	25.8	
Sorites marginalis	.9		.6		.9		1.0		3.3		1.1	6	.8	1	.6	4	1.2	.3	8	.9		.5	3	1.5	
Borelis pulchra	*						.1				.2				.1		.1	.2		.7		.3		.6	
Fissurina quadricostulata	*	1	.1		.2		.4		.3				*		.1			.1		.1		.3		.2	
Guttulina plancii							.1				.1							.1							
Guttulina problema									*		.1		*		.1			.2							
Buliminella milletti	.4		.4		.4		.6	33	.7	2	.3		.6	3	.2	7	.4		3	.7		.5		.2	
Bolivina lowmani	.1		*		.2		.4		.2		.1		.2				.1			.2		.1		.2	
Bolivina rhomboidalis	.5		.3		.3		.9		.6	2	.6	6	1.0	1	.2		.3			.8		.3	3	.5	
Bolivina striatula	.2	7	.5		.4	1	.4		.4		.1		.1				.1			.1		.3			
Rectobolivina advena									.1				*												
Bulimina spicata			*		.1		.1		.1		.2		*		.1					.1					
Reussella atlantica	*		*		.1		.1		.1				.1												
Segrina pulchella	.1		.6		.9	1	2.4		1.4		.4		1.4	1	.4	1	.5		1	.7			5		
Uvigerina bellula	*	1	*		.2				*											.1					
Uvigerina peregrina	.3	4	.7		.4		.4		.2		.6		.5		.5		.6	.1		.5		.5		.5	
Buccella hannai	*		.1		*		.2		*																
Discorbis mira	2.2		.8		.7		.4		.2		.7		.1		.4			.2		1.1		.8		.6	
Discorbis rosea					.1		.1		.1		2.1		.1		1.8		1.2	4.7		2.5		4.9		3.1	
Neoconorbina terquemi	.4		.5		.3		.5		1.0		2.0		.8	#	.9		.7	.8		1.8		1.7		.9	
Rosalina candeiana	1.4	3	1.8	35	3.4	82	2.3		5.1	37	12.5	29	6.1	86	6.6	74	6.7	3.1	73	5.1		3.5	29	3.8	33
Rosalina floridana	1.2		1.2	3	1.1		3.9		3.3		4.3		5.6		1.5		2.2	1.5		5.1		2.2		3.4	
Cancris sagra											.2		*		.1		.1			.1		.3			
Glabratella pulvinata	.2	3	.2	4	.4	3	.3		.4	8	1.0		.3	#	.1	3	.1	.2		.7		.1		.6	
Siphonina pulchra	.1		*		*				.1				*		.2					.7		.1		.2	
Asterigerina carinata							.2		1.3		1.2		.3		4.8	1	5.8	1.8		8.5		2.3	2	2.1	
Spirillina vivipara	.1	1	.4	4	.4		1.0		.7	2	.5		.1	#	.2		.1	.1		.6		1.5		.8	
Ammonia advena					.1		.6		.3		.1		.1		.1		.5	.5		.3		.2		.3	
Ammonia avalonensis	2.3		1.4	1	1.7	1	.6		2.1		3.3		2.2	#	.9	1	1.8	.5		1.6		.3	3	.3	
Ammonia beccarii sobrina	.1				*				.1		.4		.7		.9		3.0	.6		1.6		.4		.5	
Ammonia beccarii tepida	1.6		6.0	1	4.2	1	3.0		2.4	2	1.8		3.2		1.5		1.7	.4		1.3		.4		.9	
Cribroelphidium poeyanum	1.6		5.2		2.3		3.8		1.6		.7		2.1		.2		.5	.3		*					
Elphidium advenum	2.0		1.5		1.6		1.1		1.1	2	.7		1.2		.2		.1			.4					
Elphidium articulatum rugulosum	1.0	5	1.4	1	.8		2.5		1.1		.7	6	2.0	#	.2		.4	.1	1	.2		.1		.2	
Elphidium crispum	*				*		*																		
Elphidium discoidale			*		.5		.4		.4		.1		*		.1		.1	.2		.2		.5			
Elphidium sagrum	.2		.4		.1								.1		.1										
Eponidies antillarum	*								*															.3	
Eponides repandus																								.2	
Amphistegina lessonii							.1		.1		.1		.1		.2		.7	2.0		.6		4.6		4.7	
Cibicides pseudoungeriana	.2		.4		.9		.4		.9	2	2.0		2.3		.9		1.2	.2		1.6		1.4		2.4	
Planorbulina acervalis					.5		.3		.4		.6		.1		.2		.9			.5		.1	2	.9	22
Planorbulina mediterranensis	.3		.2	1	.5		.2		.4		.8		.2		.7		.7	.4		1.4		1.0	2	2.6	
Cymbaloporetta squammosa							.1		.1		.1				.6		.4	1.1		.4		1.0		1.4	
Fursenkoina punctata	*		.1		.3		.4		.2				.3		.1		.1	.1							
Sigmavirgulina tortuosa	.1		.1		.1		*		.1		.4		.1				.3	.1		.2				.2	11
Loxostomum limbatum					*		*		*		.1				.1		.1			*					
Loxostomum mayori					.1																	.1		.2	
Cassidulina subglobosa							.1		.2		.4		*		.1			.1		.1		.3		1.1	
Astrononion sidebottomi					.1		*																		
Nonion grateloupi	.1		.3		*		.9		.7		.2		.1		.2					.1		.1			

* less than 0.1 percent
\# less than

For each station, the first column represents the percentage occurrance of a species in the total bottom population. The second column represents the percentage occurrance of a species in the population living on the vegetation.

TABLE 4

CHI-SQUARE TEST OF 3 ADJACENT SAMPLES FROM THE SAME LOCATION

Sample	Degrees of Freedom	$\chi^2_{.95}$	Computed Chi-Square	Results
1	98	122.10	542.11	Samples from different populations
2	108	133.25	217.03	Samples from different populations
3	72	92.79	158.19	Samples from different populations
4	62	81.39	144.88	Samples from different populations
5	74	95.10	150.79	Samples from different populations
6	36	50.99	89.29	Samples from different populations
8	56	74.49	65.36	Samples from same population
9	28	41.34	52.09	Samples from different populations
9a	48	65.16	71.46	Samples from different populations
10	20	31.41	73.17	Samples from different populations
10a	64	83.67	83.26	Marginal
11	6	12.59	31.13	Samples from different populations
12	4	9.49	11.96	Samples from different populations

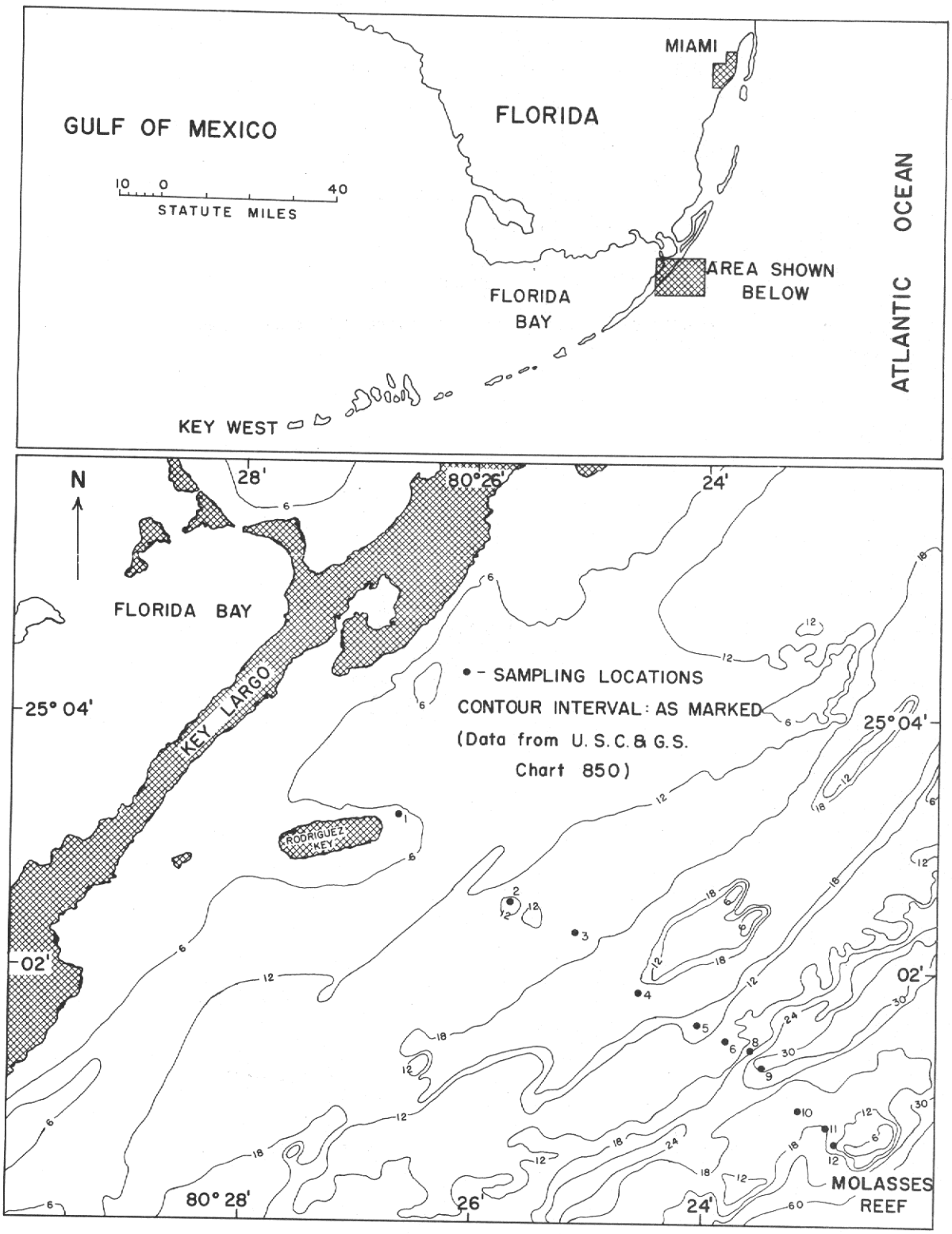


FIGURE I. LOCATION MAP

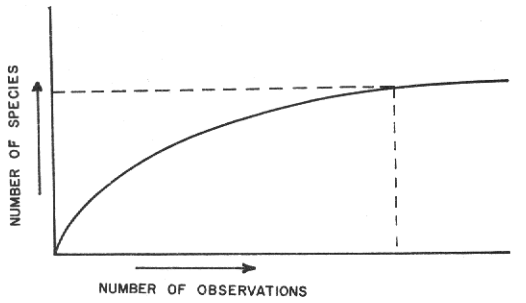


FIGURE 2

RELATIONSHIP OF SPECIES ABUNDANCE TO SAMPLE SIZE

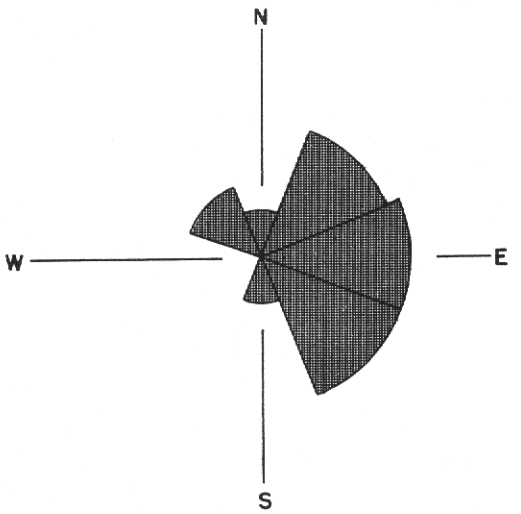


FIGURE 3.
PREVAILING WINDS IN THE REEF TRACT
(after Vaughn, 1910)

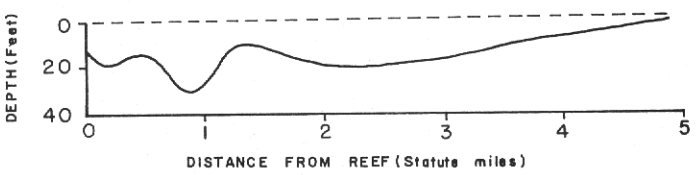


FIGURE 4.
BOTTOM PROFILE ALONG TRAVERSE

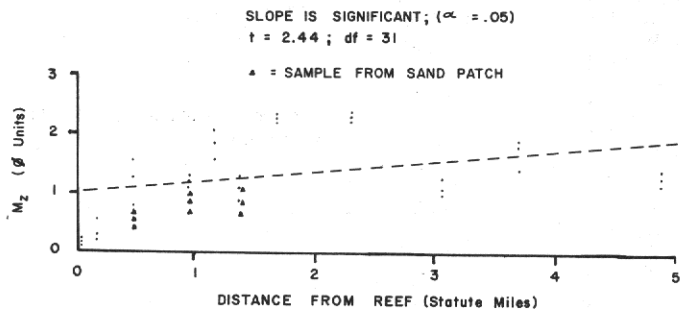


FIGURE 5

RELATIONSHIP OF MEAN GRAIN SIZE TO DISTANCE

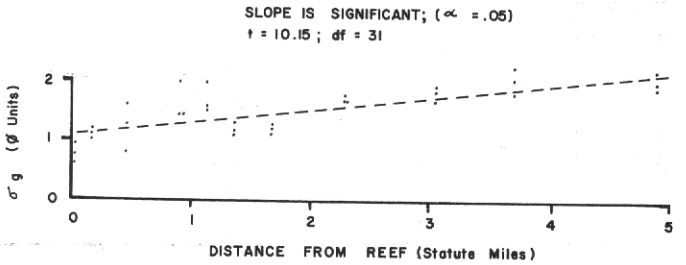


FIGURE 6

RELATIONSHIP OF SORTING TO DISTANCE

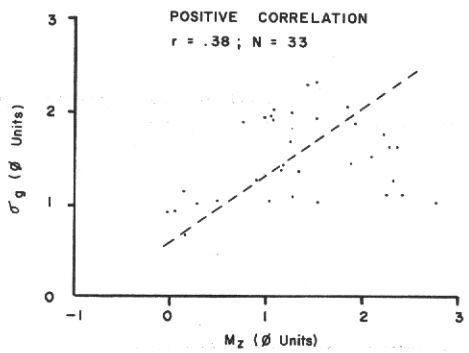


FIGURE 7

RELATIONSHIP BETWEEN MEAN GRAIN SIZE AND SORTING

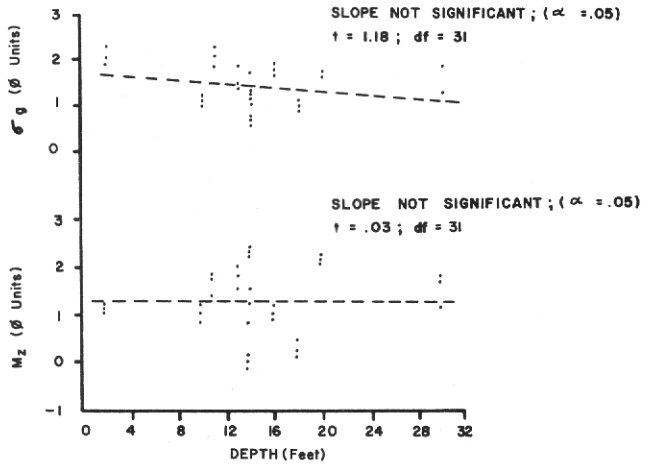


FIGURE 8

RELATIONSHIP OF SEDIMENT PARAMETERS TO DEPTH

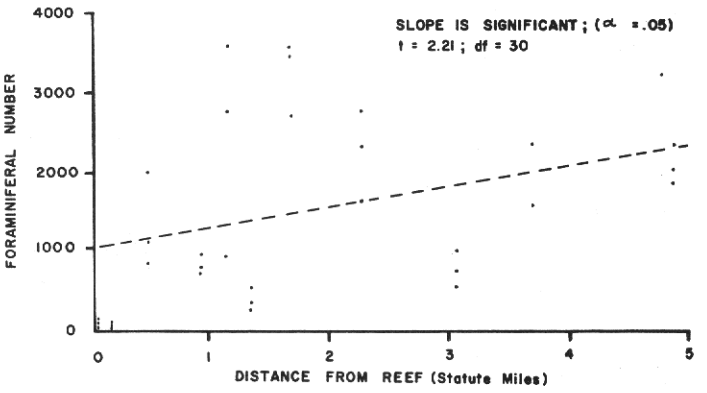


FIGURE 9

RELATIONSHIP OF FORAMINIFERAL NUMBER TO DISTANCE

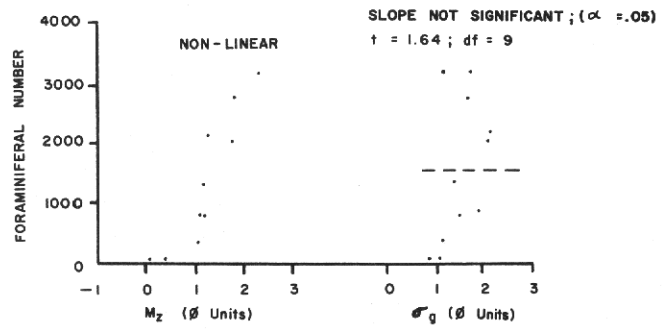


FIGURE 10

RELATIONSHIP OF FORAMINIFERAL NUMBER TO SEDIMENT PARAMETERS

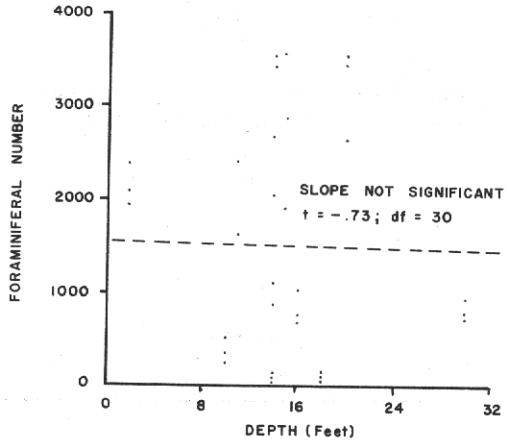


FIGURE 11

RELATIONSHIP BETWEEN FORAMINIFERAL NUMBER AND DEPTH

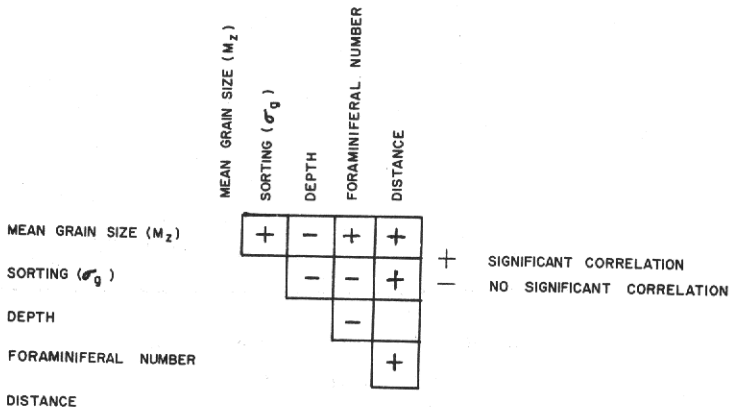


FIGURE 12

RELATIONSHIPS BETWEEN MEASURABLE PARAMETERS

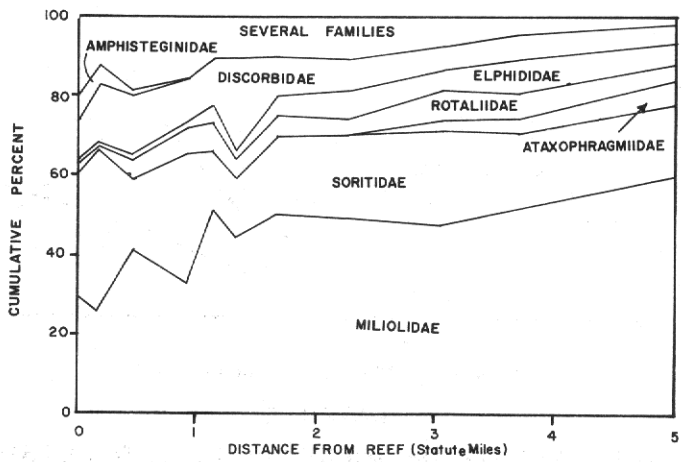
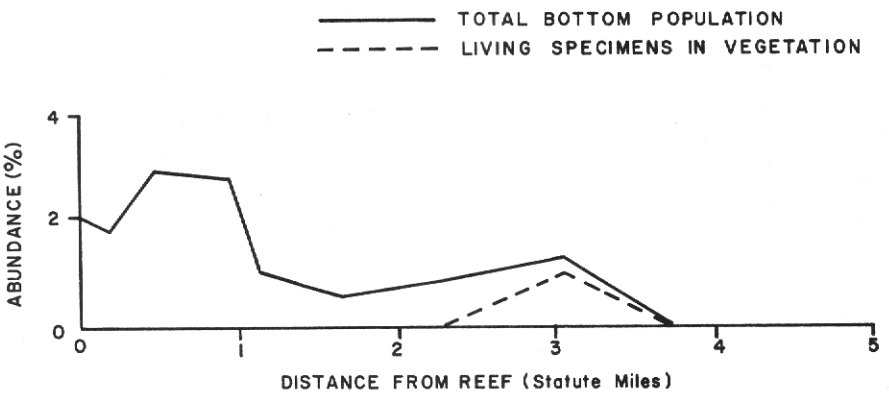


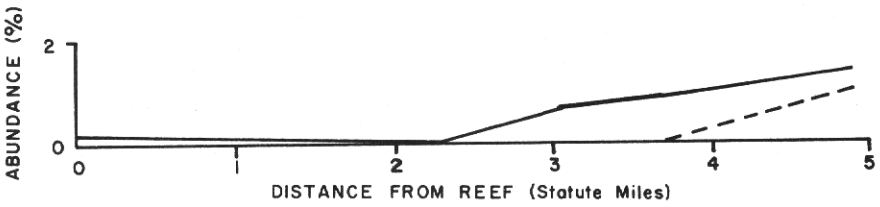
FIGURE 13

DISTRIBUTION OF FAMILIES



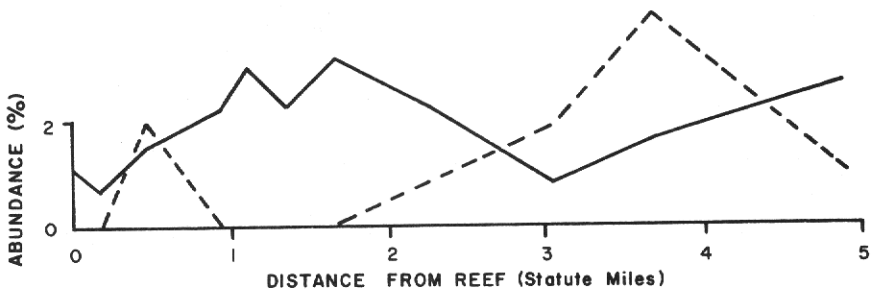
GRAPH 1

DISTRIBUTION OF TEXTULARIA AGGLUTINANS



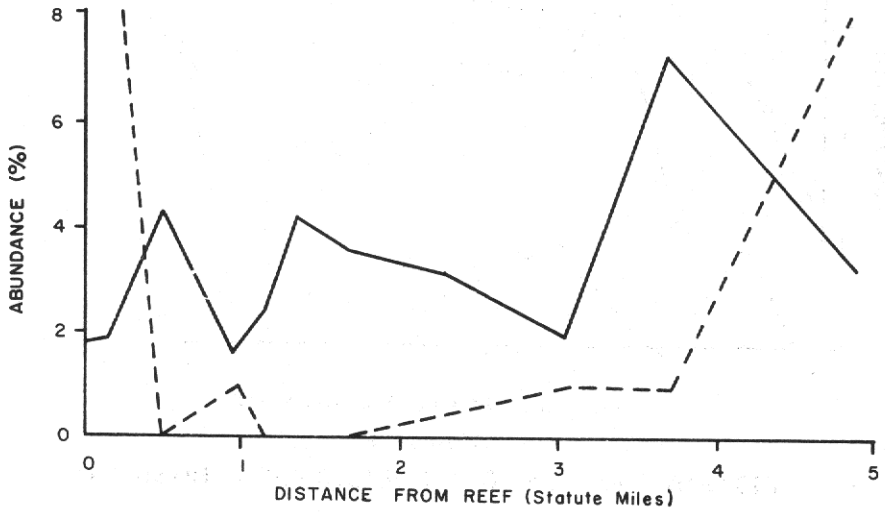
GRAPH 2

DISTRIBUTION OF CLAVULINA TRICARINATA

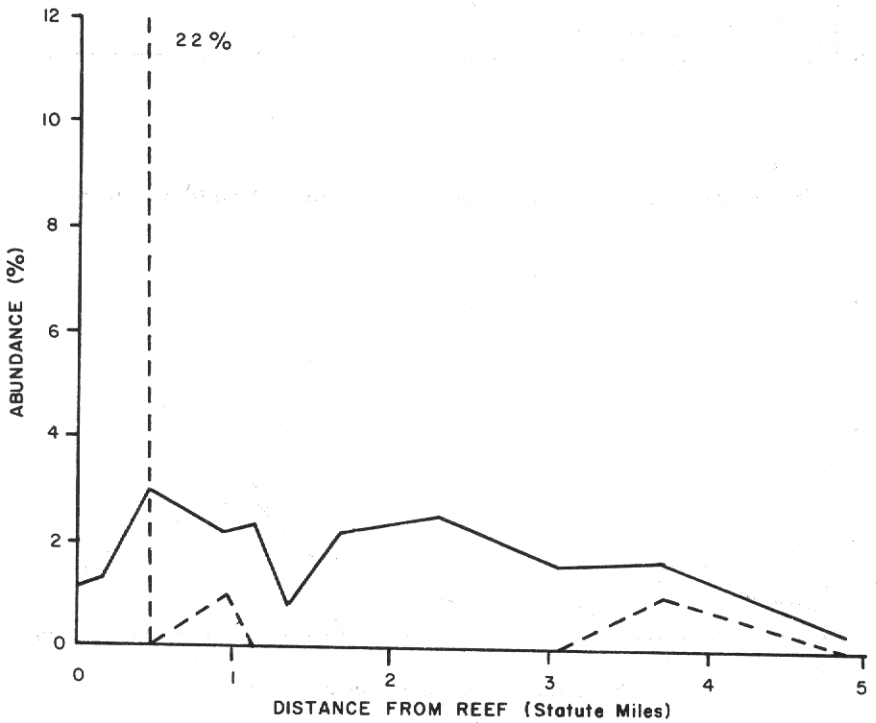


GRAPH 3

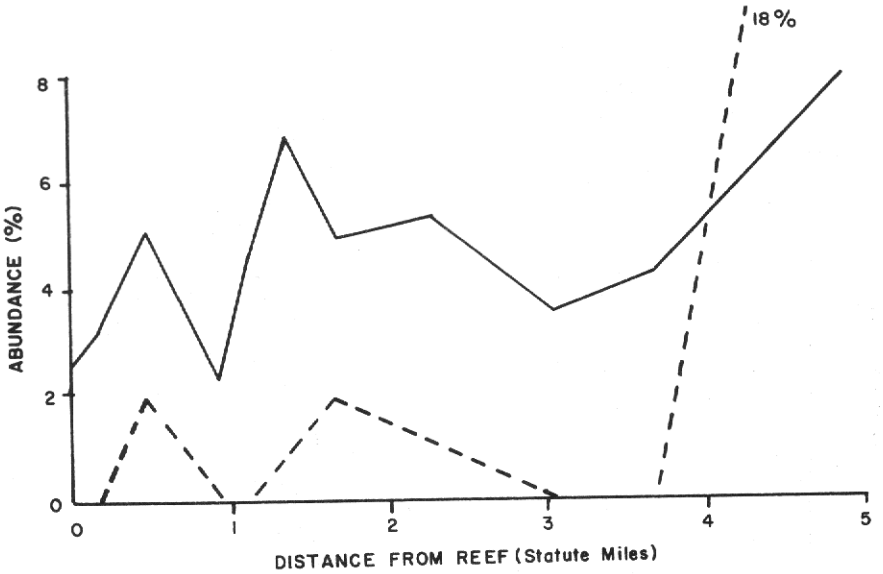
DISTRIBUTION OF MILIOLINELLA CIRCULARIS



GRAPH 4
DISTRIBUTION OF SCUTULORIS BOCKI

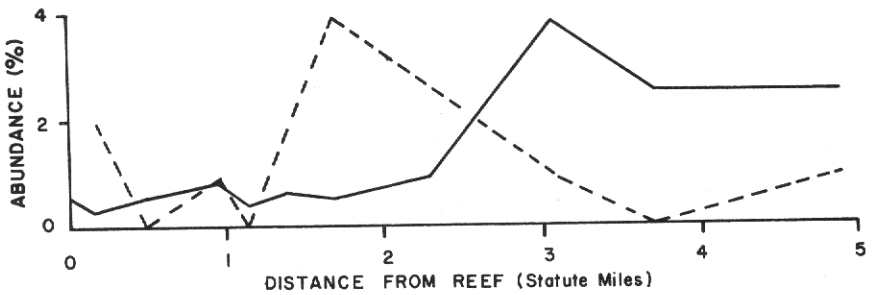


GRAPH 5
DISTRIBUTION OF ARTICULINA PACIFICA



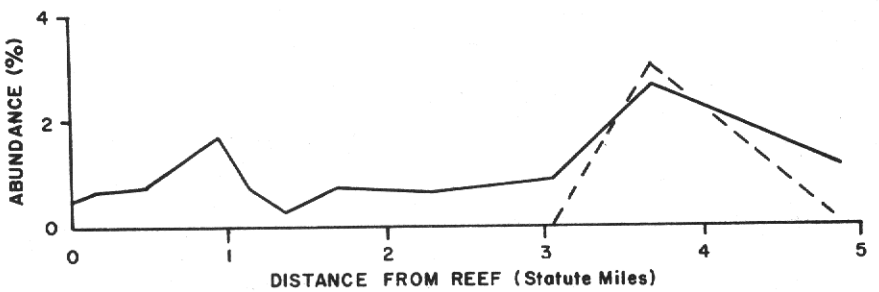
GRAPH 6

DISTRIBUTION OF QUINQUELOCULINA BOSCIANA



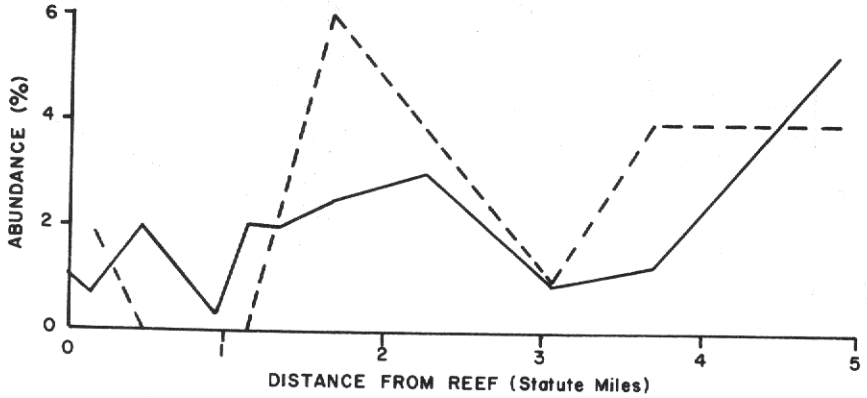
GRAPH 7

DISTRIBUTION OF QUINQUELOCULINA LAMARCKIANA



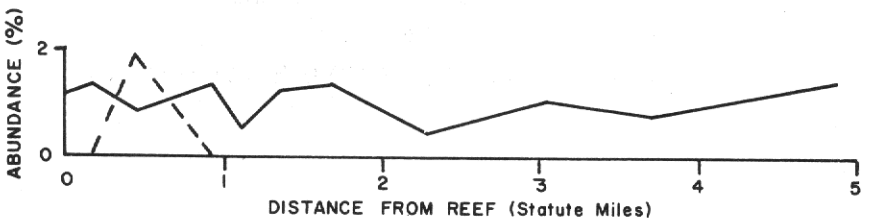
GRAPH 8

DISTRIBUTION OF TRILOCULINA BASSENSIS



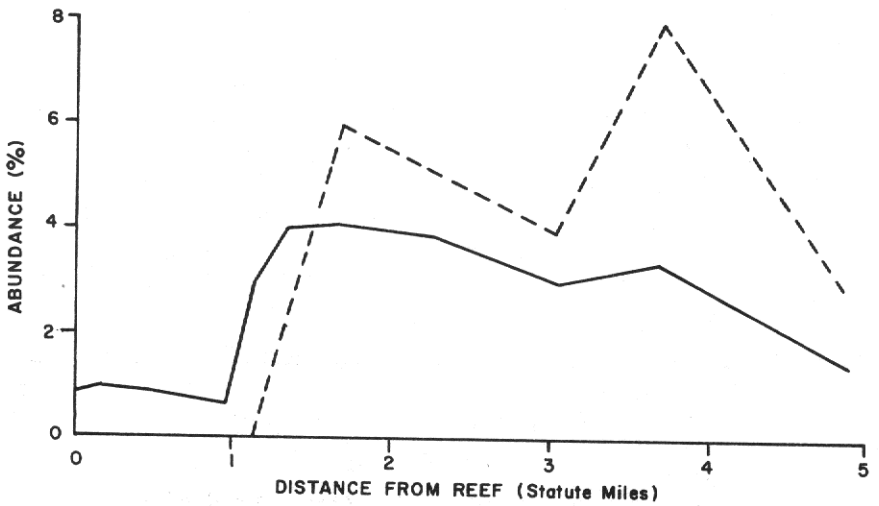
GRAPH 9

DISTRIBUTION OF TRILOCULINA BERMUDEZI



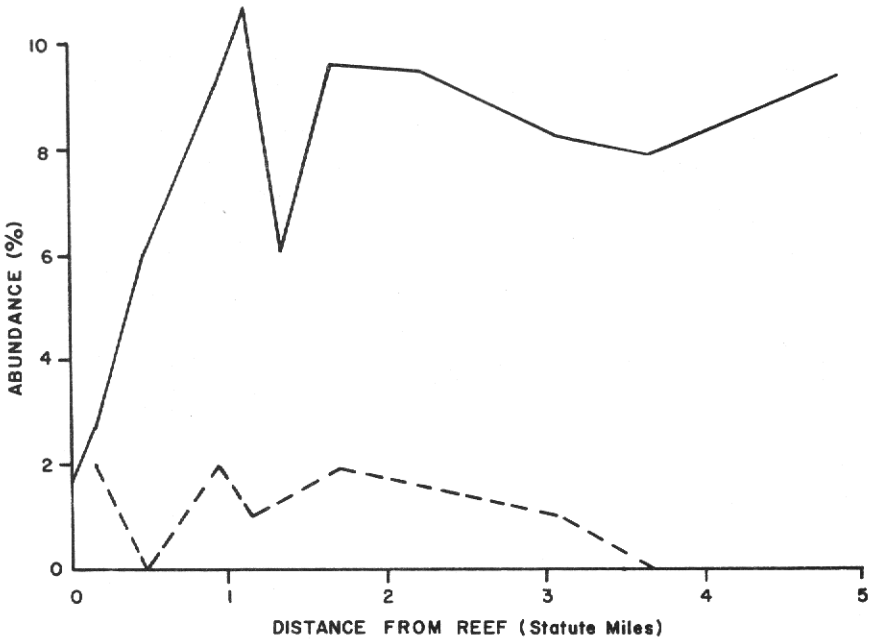
GRAPH 10

DISTRIBUTION OF TRILOCULINA LINNEIANA



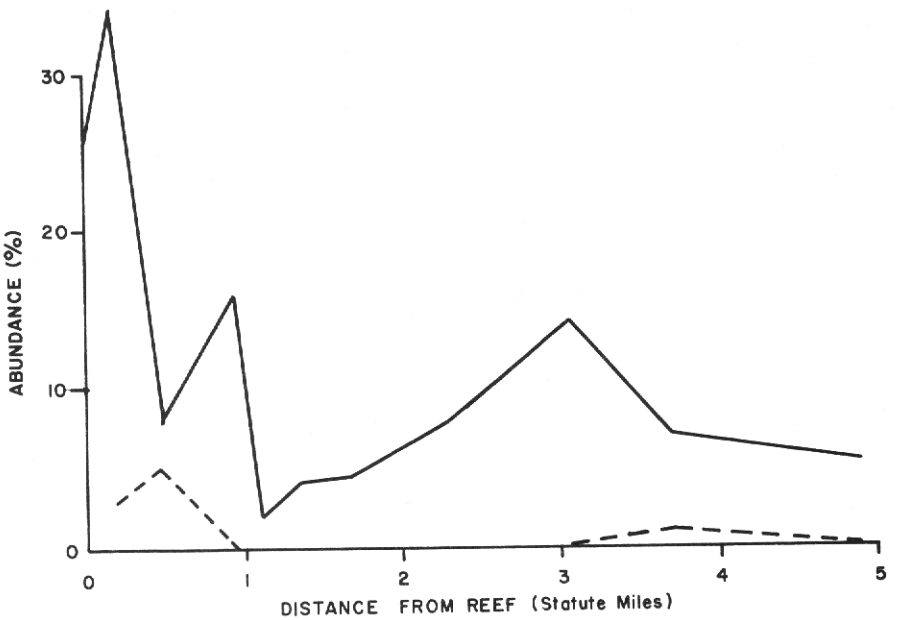
GRAPH 11

DISTRIBUTION OF TRILOCULINA TRIGONULA



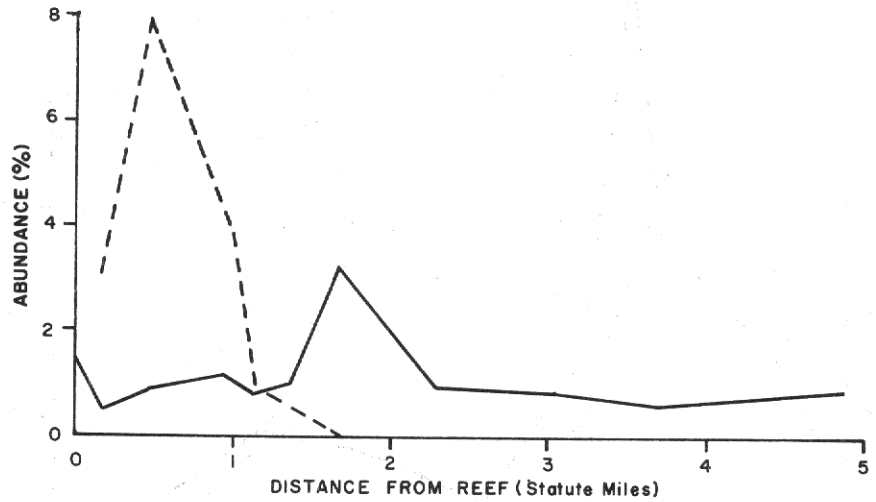
GRAPH 12

DISTRIBUTION OF PENEROPLIS CARINATUS

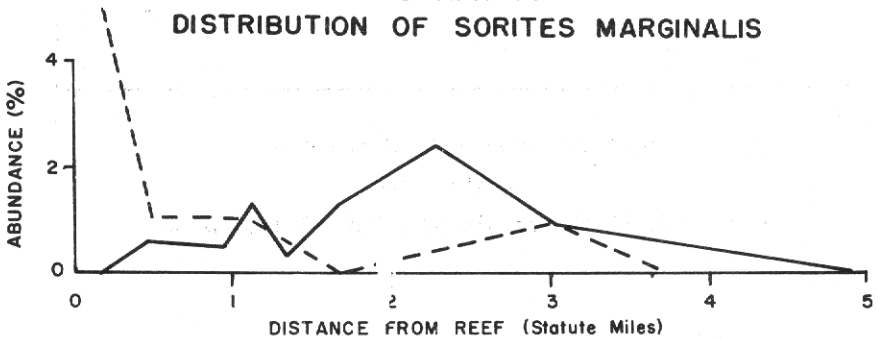


GRAPH 13

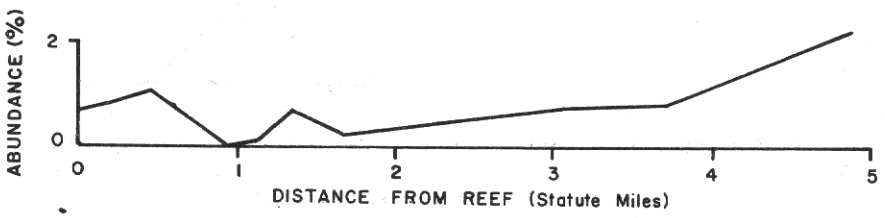
DISTRIBUTION OF ARCHAIAS ANGLATUS



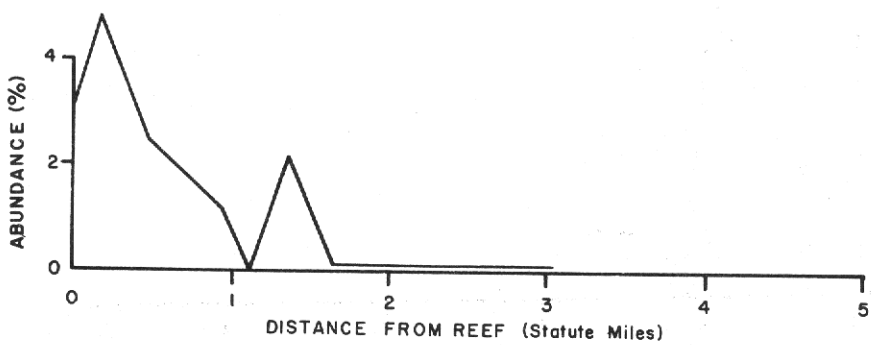
GRAPH 14
DISTRIBUTION OF SORITES MARGINALIS



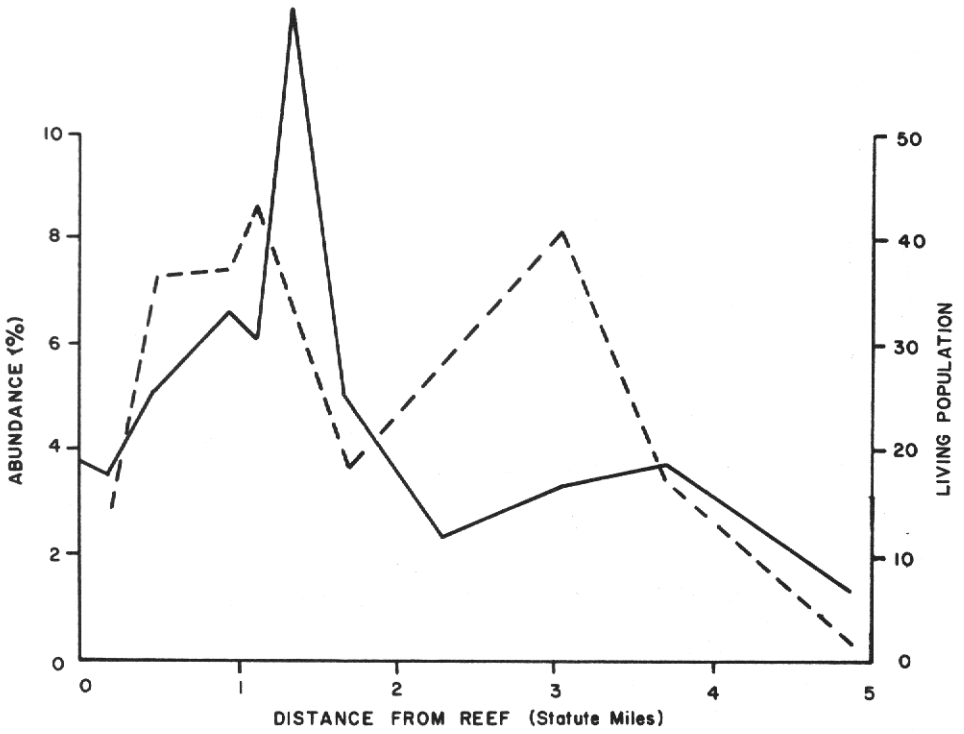
GRAPH 15
DISTRIBUTION OF SAGRINA PULCHELLA



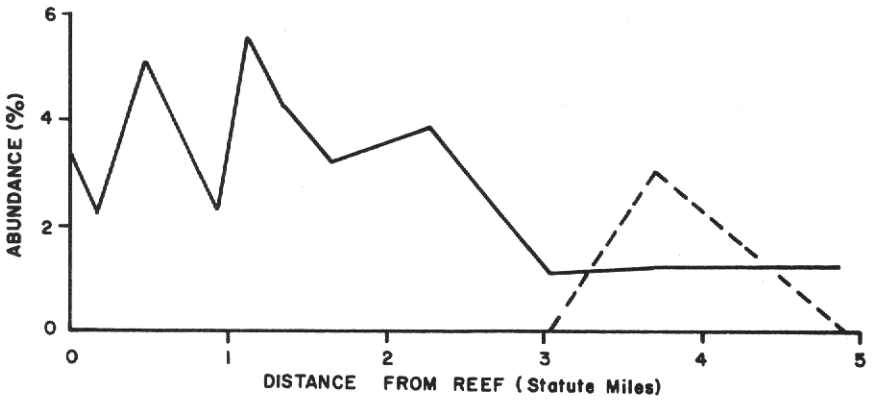
GRAPH 16
DISTRIBUTION OF DISCORBIS MIRA



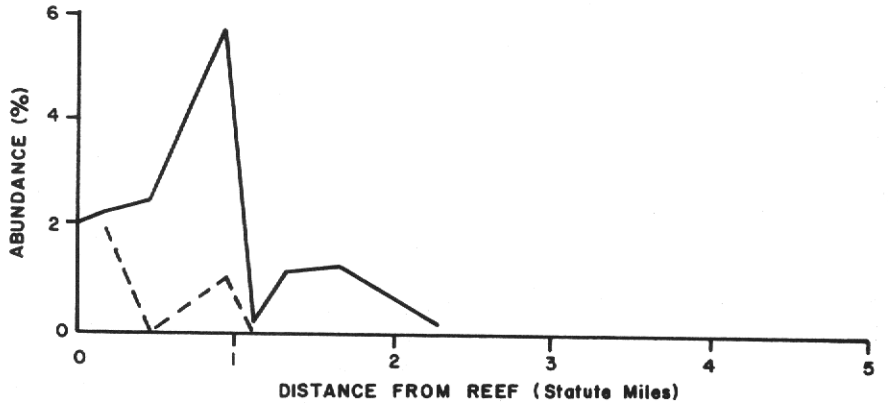
GRAPH 17
DISTRIBUTION OF DISCORBIS ROSEA



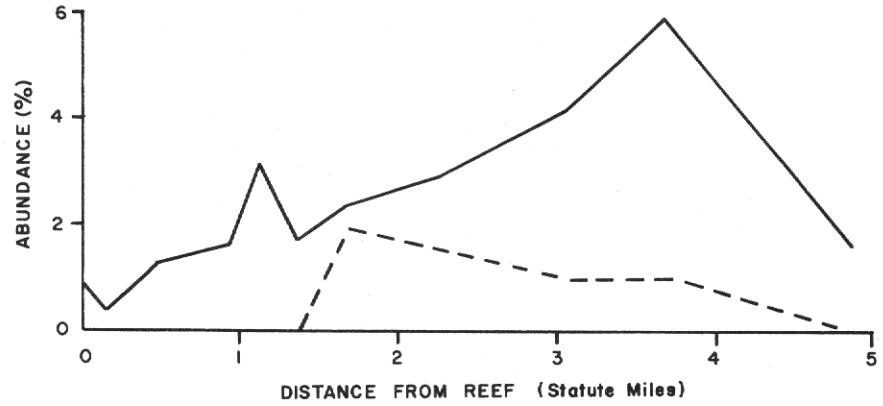
GRAPH 18
DISTRIBUTION OF ROSALINA CANDEIANA



GRAPH 19
DISTRIBUTION OF ROSALINA FLORIDANA

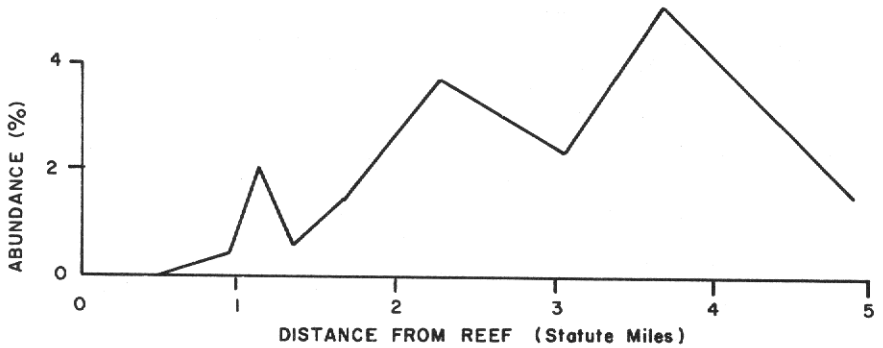


GRAPH 20
DISTRIBUTION OF ASTERIGERINA CARINATA



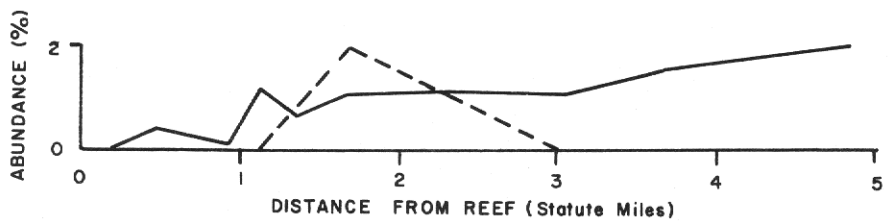
GRAPH 21

DISTRIBUTION OF AMMONIA BECCARII TEPIDA



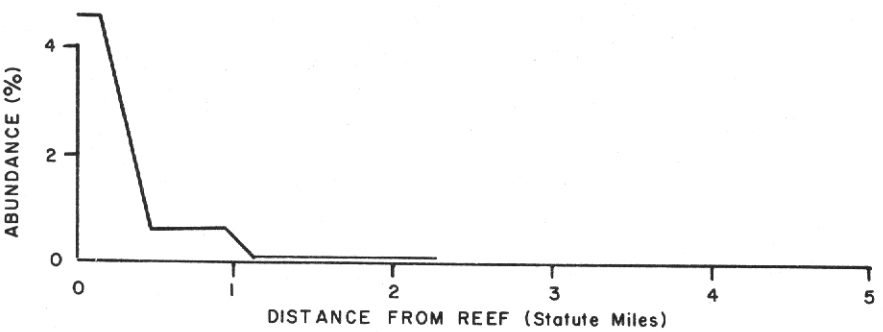
GRAPH 22

DISTRIBUTION OF CRIBROELPHIDIUM POEYANUM



GRAPH 23

DISTRIBUTION OF ELPHIDIUM ADVENUM



GRAPH 24

DISTRIBUTION OF AMPHISTEGINA LESSONII